



# Using nurse crops



Image: Scion

Nurse crops are plants and trees used to help tree seedlings establish and grow.

They are established before seedlings are planted underneath them, and can:

- provide shelter, helping protect seedlings from frost, wind, and intense sun
- reduce the chances of weed infestation
- control branch size and form of the tree, making sure it grows tall rather than bushy.

Whether you use nurse crops depends on:

- the tree species you're planting
- planting density (the number of seedlings planted per hectare (stems/ha))
- whether you can provide ongoing maintenance
- environmental and site conditions, like frost, wind, and drought
- why you're planting, for example for harvest, around waterways, or for reversion to native forest.

If not maintained properly, nurse crops can sometimes compete with seedlings for light, soil nutrients and water.

You can plant and establish a nurse crop before you plant tree seedlings, or you can plant tree seedlings under a natural nurse crop.

## Using planted nurse crops

Ideally, nurse crops should be established at least 2 to 3 years before planting trees.

Before planting a nurse crop:

- fence the site using a secure 7 or 8 wire perimeter fence if grazing animals (feral or domestic) are present
- identify and control weeds in and around the planting site.

A general nurse crop mix suitable for most tree species and sites would be:

- 80% mānuka
- 10% kānuka
- 10% made up of karamū, five-finger and māhoe.

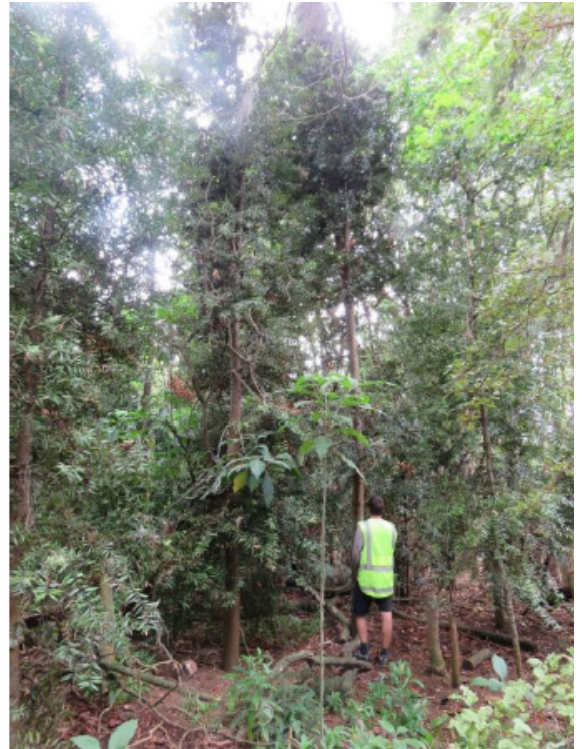
Depending on the type of weeds at the site, nurse crops should be planted in a grid between 4 x 4 metres (625 stems/ha) and 2 x 2 metres (2500 stems/ha).

## Using natural nurse crops

Where there's existing shrubland or vegetation like mānuka, kānuka, or gorse, you can use these plants as a nurse crop to help seedlings establish.

- Tree crops can be established in gaps or lanes cut in the nurse crop cover.
- Lanes or gaps should be at least half, or equal to, the height of the surrounding vegetation. The size of the opening depends on why, where and what you're planting, and how you're planning to manage it.
- Don't cut lanes or gaps where there's natural regeneration of species that'll benefit your overall forest establishment, unless you're creating gaps to allow more light to reach existing tree seedlings and saplings.
- Note that vegetation might respond to lane or gap cutting by growing outwards and closing over artificially created gaps. Maintain lanes/gaps to help seedling growth.
- Using low vegetation to help establish exotic tree crops will most likely lead to an exotic dominated forest. In these situations, carefully assess the site before lane/gap cutting to identify and protect any areas of natural regeneration that you want or need to protect.





Above: Kauri at age 20 years, beneath a planted mānuka nurse crop (left) and beneath a collapsed tree lucerne canopy (Images: Scion).



Above: Examples of rewarewa and pūriri soon after being planted beneath managed natural nurse crops. Images: Scion.






## Planting trees under your nurse crops

When choosing tree species to plant, make sure they're suitable for the site, the climate, and your reason for planting. Take future climate conditions into account.

## Maintaining your planting

- Regularly inspect all plantings for animal damage, and to see if weed control is needed.
- Where necessary, manage the nurse crop (by thinning or pruning) to make sure the tree crop can grow properly.

Regime	Planting density for timber	Planting in gaps and lanes
<b>Native trees with planted nurse crop</b> 	<ul style="list-style-type: none"> <li>• If you're planting native trees for timber within a planted nurse crop, plant between 625–1000 stems/ha.</li> <li>• Plant more trees per hectare if you're planting species that are prone to having more than one leader (the central vertical stem of a tree). Only do this once the canopy formed by the nurse crop is almost complete.</li> </ul>	<p>Gaps in the top tree layer (canopy) can be created in the nurse crop by careful pruning, or by removing individual plants. This helps the seedlings get more light.</p>
<b>Native trees with natural nurse crop</b> 	<ul style="list-style-type: none"> <li>• If you're planting native trees for timber in a natural nurse crop, plant between 625–800 stems/ha.</li> </ul>	<p>Establish trees in narrower lane widths if you're planting species prone to having more than one leader, or if they're prone to frost damage.</p> <p>If planting species where the central stem of the plant grows more strongly than side stems, plant them in wider lanes and gaps in double or multiple rows.</p>
<b>Exotic trees with natural nurse crop</b> 	<ul style="list-style-type: none"> <li>• If you're planting trees for timber, plant around 800 stems/ha.</li> </ul>	<p>If you're planting species prone to having more than one leader, or if they're prone to frost damage, plant in narrower lanes or plant closer together within lanes. Some stem and form pruning may still be needed to achieve a saleable bole length (a good size log with minimal knots).</p> <p>If planting species where the central stem of the plant grows more strongly than side stems, plant them in wider lanes and gaps as double or multiple rows.</p>

### Want more information?

Read the Summary report – **Establishing native and exotic tree crops in indigenous landscapes**

Tirohanga Ngahere | Canopy: [www.canopy.govt.nz](http://www.canopy.govt.nz)

One Billion Trees: [www.mpi.govt.nz/1BT](http://www.mpi.govt.nz/1BT)

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